

# Texas Water Development Board



**W** *Conditions* **A** **T** **T** **E** **R**

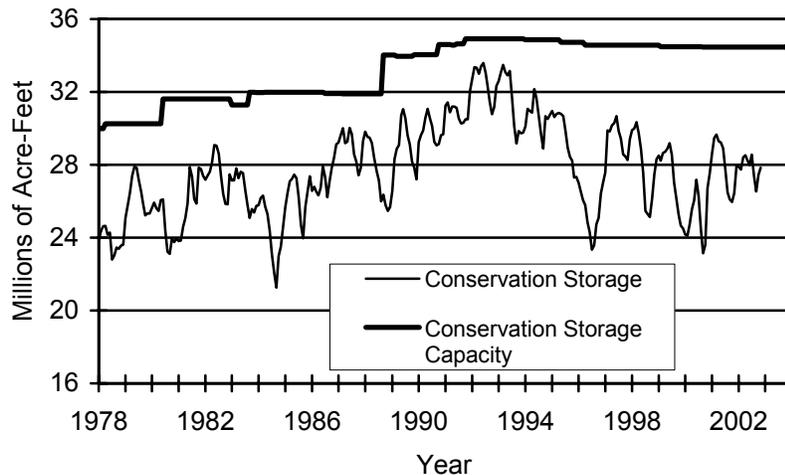
## RESERVOIR STORAGE

*November 2002*

Near the end of November, the 77 reservoirs monitored for this report held 27.84 million acre-feet in conservation storage, or 80.8 percent of the conservation storage capacity of the State's major reservoirs. Statewide total storage is very close to the median for this time of year. Storage increased for the month, up 0.41 million acre-feet (+1.2%). Compared to last year at this time, storage is up 1.41 million acre-feet (+4.1%).

Storage in the Upper Coast (100%) and South Central (99%) Regions are at or near capacity, while the High Plains (34%), Low Rolling Plains (49%), Trans-Pecos (15%), Edwards Plateau (48%) and Southern (52%) Regions all either remained at the same low level or increased slightly from last month. The North Central (91%) and East (91%) Regions both remained fairly high. Storage is at 100% in 17 reservoirs, down 5 from last month. Lake Corpus Christi remained at 100% for the month of November; Choke Canyon is at 99%.

### CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS



Current data are based on elevation near end of month at 77 reservoirs that represent 98 percent of total conservation storage capacity in Texas reservoirs having a capacity of 5,000 acre-feet or more.

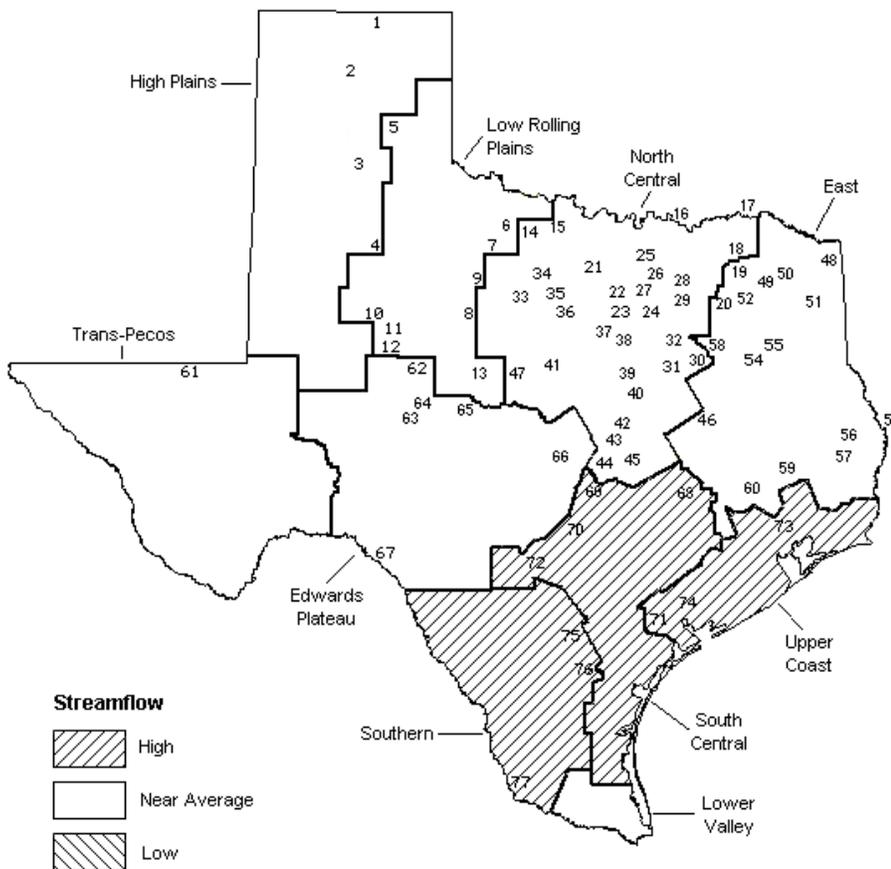
# STREAMFLOW

Of 29 reporting index stations in November, computed 30-day mean flows were very high (0% - 5% exceedance) at 7 stations, high (5% - 30% exceedance) at 8 stations, near normal (30% - 70% exceedance) at 9 stations, and low (70% - 95% exceedance) at 5 stations. Compared to October, flows increased at 11 index stations and decreased at 18.

On a regional basis, flows in November were normal everywhere except in the South Central and Upper Coast Regions (Very High) and in the Southern Region, which experienced High flow conditions.

## NOVEMBER STREAMFLOW CONDITIONS

Reservoirs Shown on Map



- |                                  |                             |
|----------------------------------|-----------------------------|
| 1. Palo Duro Reservoir           | 40. Waco Lake               |
| 2. Lake Meredith                 | 41. Proctor Lake            |
| 3. MacKenzie Reservoir           | 42. Belton Lake             |
| 4. White River Lake              | 43. Stillhouse Hollow Lake  |
| 5. Greenbelt Reservoir           | 44. Lake Georgetown         |
| 6. Lake Kemp                     | 45. Granger Lake            |
| 7. Miller's Creek Reservoir      | 46. Lake Limestone          |
| 8. Fort Phantom Hill Reservoir   | 47. Lake Brownwood          |
| 9. Lake Stamford                 | 48. Wright Patman Lake      |
| 10. Lake J. B. Thomas            | 49. Lake Cypress Springs    |
| 11. Lake Colorado City           | 50. Lake Bob Sandlin        |
| 12. Champion Creek Reservoir     | 51. Lake O' the Pines       |
| 13. Hords Creek Lake             | 52. Lake Fork Reservoir     |
| 14. Lake Kickapoo                | 53. Toledo Bend Reservoir   |
| 15. Lake Arrowhead               | 54. Lake Palestine          |
| 16. Lake Texoma                  | 55. Lake Tyler              |
| 17. Pat Mayse Lake               | 56. Sam Rayburn Reservoir   |
| 18. Cooper Lake                  | 57. B. A. Steinhagen Lake   |
| 19. Lake Sulphur Springs         | 58. Cedar Creek Reservoir   |
| 20. Lake Tawakoni                | 59. Lake Livingston         |
| 21. Bridgeport Reservoir         | 60. Lake Conroe             |
| 22. Eagle Mountain Reservoir     | 61. Red Bluff Reservoir     |
| 23. Benbrook Lake                | 62. E. V. Spence Reservoir  |
| 24. Joe Pool Lake                | 63. Twin Buttes Reservoir   |
| 25. Ray Roberts Lake             | 64. O. C. Fisher Lake       |
| 26. Lewisville Lake              | 65. O. H. Ivie Reservoir    |
| 27. Grapevine Lake               | 66. Lake Buchanan           |
| 28. Lavon Lake                   | 67. Intl. Amistad Reservoir |
| 29. Lake Ray Hubbard             | 68. Somerville Lake         |
| 30. Richland-Chambers Creek Lake | 69. Lake Travis             |
| 31. Navarro Mills Lake           | 70. Canyon Lake             |
| 32. Bardwell Lake                | 71. Coletto Creek Reservoir |
| 33. Hubbard Creek Reservoir      | 72. Medina Lake             |
| 34. Lake Graham                  | 73. Lake Houston            |
| 35. Possum Kingdom Lake          | 74. Lake Texana             |
| 36. Lake Palo Pinto              | 75. Choke Canyon Reservoir  |
| 37. Lake Granbury                | 76. Lake Corpus Christi     |
| 38. Lake Pat Cleburne            | 77. Intl. Falcon Reservoir  |
| 39. Whitney Lake                 |                             |

**CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS**

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late November 2002 (acre-feet) (%)	Change since Late October 2002 (acre-feet) (%)	Change since Late November 2001 (acre-feet) (%)
<b>HIGH PLAINS</b>					
Palo Duro Reservoir	1	60,900	3,610 6	-230 0	-3,310 -5
Lake Meredith (Texas)	2	500,000	199,450 40	-3,530 -1	-63,450 -13
Lake Meredith (Texas and Oklahoma)	(2)	779,560	199,450 26	-3,530 0	-63,450 -8
MacKenzie Reservoir	3	46,250	8,130 18	-150 0	-560 -1
White River Lake	4	31,850	5,650 18	-250 -1	-2,300 -7
<b>TOTAL</b>		<b>639,000</b>	<b>216,840 34</b>	<b>-4,160 -1</b>	<b>-69,620 -11</b>
<b>LOW ROLLING PLAINS</b>					
Greenbelt Reservoir	5	58,200	23,040 40	-150 0	-970 -2
Lake Kemp	6	319,600	227,700 71	3,700 1	94,600 30
Miller's Creek Reservoir	7	27,890	15,280 55	-350 -1	2,320 8
Fort Phantom Hill Reservoir	8	70,030	44,930 64	-1,820 -3	13,900 20
Lake Stamford	9	52,700	40,310 76	-680 -1	24,340 46
Lake J. B. Thomas	10	202,300	21,180 10	-150 0	-960 0
Lake Colorado City	11	30,800	16,660 54	-290 -1	-2,650 -9
Champion Creek Reservoir	12	41,600	2,270 5	-50 0	70 0
Hords Creek Lake	13	8,600	2,550 30	-80 -1	-680 -8
<b>TOTAL</b>		<b>811,720</b>	<b>393,920 49</b>	<b>130 0</b>	<b>129,970 16</b>
<b>NORTH CENTRAL</b>					
Lake Kickapoo	14	106,000	81,600 77	-1,680 -2	8,320 8
Lake Arrowhead	15	262,100	153,470 59	-530 0	-2,130 -1
Lake Texoma	16	2,722,300	2,621,010 96	80,310 3	9,010 0
Pat Mayse Lake	17	124,500	118,280 95	-3,830 -3	1,280 1
Cooper Lake	18	273,000	273,000 100	0 0	0 0
Lake Sulphur Springs	19	17,710	17,470 99	-240 -1	5,450 31
Lake Tawakoni	20	936,200	873,700 93	-36,200 -4	53,500 6
Bridgeport Reservoir	21	374,830	277,400 74	-6,500 -2	-13,300 -4
Eagle Mountain Reservoir	22	178,380	141,000 79	-5,900 -3	-4,900 -3
Benbrook Lake	23	88,200	77,810 88	2,540 3	10,200 12
Joe Pool Lake	24	175,800	175,060 100	-740 0	460 0
Ray Roberts Lake	25	798,760	782,330 98	-4,320 -1	32,530 4
Lewisville Lake	26	555,000	555,000 100	0 0	46,500 8
Grapevine Lake	27	187,700	163,060 87	-6,460 -3	20,460 11
Lavon Lake	28	443,800	380,830 86	-11,730 -3	83,230 19
Lake Ray Hubbard	29	413,420	399,600 97	-10,500 -3	19,100 5
Richland-Chambers Creek Lake	30	1,103,820	1,030,000 93	-18,000 -2	4,000 0
Navarro Mills Lake	31	55,810	52,120 93	-1,120 -2	-3,690 -7
Bardwell Lake	32	53,580	41,480 77	-1,020 -2	-4,310 -8
Hubbard Creek Reservoir	33	317,800	151,100 48	-1,700 -1	29,500 9
Lake Graham	34	45,000	29,940 67	-520 -1	-4,450 -10
Possum Kingdom Lake	35	551,820	483,200 88	1,600 0	20,900 4
Lake Palo Pinto	36	27,650	22,850 83	-1,140 -4	7,120 26
Lake Granbury	37	135,680	130,700 96	-2,000 -1	14,900 11
Lake Pat Cleburne	38	25,300	20,180 80	-740 -3	250 1
Whitney Lake	39	622,800	465,770 75	-42,490 -7	11,570 2
Waco Lake	40	144,500	140,280 97	-4,220 -3	-4,220 -3
Proctor Lake	41	55,590	55,450 100	-140 0	18,140 33
Belton Lake	42	434,500	434,500 100	5,080 1	0 0
Stillhouse Hollow Lake	43	226,060	226,060 100	0 0	0 0
Lake Georgetown	44	37,010	37,010 100	0 0	0 0
Granger Lake	45	54,280	54,280 100	0 0	0 0
Lake Limestone	46	215,750	215,750 100	1,150 1	8,150 4
Lake Brownwood	47	143,400	131,780 92	-1,040 -1	21,180 15
<b>TOTAL</b>		<b>11,908,050</b>	<b>10,813,070 91</b>	<b>-72,080 -1</b>	<b>388,750 3</b>

**CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS**

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late November 2002 (acre-feet) (%)	Change since Late October 2002 (acre-feet) (%)	Change since Late November 2001 (acre-feet) (%)
<b>EAST</b>					
Wright Patman Lake	48	142,700	142,700 100	0 0	0 0
Lake Cypress Springs	49	66,800	66,800 100	0 0	0 0
Lake Bob Sandlin	50	202,300	200,600 99	-1,700 -1	-1,700 -1
Lake O' the Pines	51	252,000	243,580 97	520 0	-8,420 -3
Lake Fork Reservoir	52	635,200	635,200 100	0 0	0 0
Toledo Bend Reservoir	53	4,472,900	3,793,000 85	154,000 3	511,000 11
Lake Palestine	54	411,300	372,720 91	-1,930 0	-35,080 -9
Lake Tyler	55	73,700	73,700 100	0 0	0 0
Sam Rayburn Reservoir	56	2,876,300	2,560,780 89	236,420 8	-54,220 -2
B. A. Steinhagen Lake	57	94,200	84,130 89	-4,020 -4	53,370 57
Cedar Creek Reservoir	58	637,050	604,300 95	-14,000 -2	-22,300 -4
Lake Livingston	59	1,750,000	1,740,000 99	-10,000 -1	-10,000 -1
Lake Conroe	60	429,900	416,000 97	-2,500 -1	-4,700 -1
TOTAL		12,044,350	10,933,510 91	356,790 3	427,950 4
<b>TRANS-PECOS</b>					
Red Bluff Reservoir	61	307,000	46,120 15	1,190 0	12,320 4
TOTAL		307,000	46,120 15	1,190 0	12,320 4
<b>EDWARDS PLATEAU</b>					
E. V. Spence Reservoir	62	488,760	43,990 9	-1,690 0	-17,930 -4
Twin Buttes Reservoir	63	177,800	6,000 3	0 0	-1,560 -1
O.C. Fisher Lake	64	119,200	3,470 3	-150 0	-1,120 -1
O. H. Ivie Reservoir	65	554,340	216,000 39	-4,200 -1	-44,300 -8
Lake Buchanan	66	896,980	875,000 98	8,870 1	115,200 13
Amistad Reservoir (Texas)	67	1,771,030	764,000 43	39,000 2	10,000 1
Amistad Reservoir (Texas and Mexico)	(67)	3,151,300	987,000 31	37,000 1	56,000 2
TOTAL		4,008,110	1,908,460 48	41,830 1	60,290 2
<b>SOUTH CENTRAL</b>					
Somerville Lake	68	155,060	155,060 100	0 0	0 0
Lake Travis	69	1,144,100	1,135,800 99	30,600 3	-8,300 -1
Canyon Lake	70	385,600	380,500 99	-5,100 -1	-5,100 -1
Coletto Creek Reservoir	71	35,060	31,930 91	630 2	220 1
Medina Lake	72	254,000	254,000 100	0 0	1,600 1
TOTAL		1,973,820	1,957,290 99	26,130 1	-11,580 -1
<b>UPPER COAST</b>					
Lake Houston	73	128,860	128,860 100	0 0	0 0
Lake Texana	74	157,900	156,660 99	-1,240 -1	-1,240 -1
TOTAL		286,760	285,520 100	-1,240 0	-1,240 0

## CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late November 2002 (acre-feet) (%)	Change since Late October 2002 (acre-feet) (%)	Change since Late November 2001 (acre-feet) (%)
------------------------------	------------------	--	--	---	--

### SOUTHERN

Choke Canyon Reservoir	75	695,260	691,000 99	-4,260 -1	404,000 58
Lake Corpus Christi	76	241,240	241,240 100	780 0	0 0
Falcon Reservoir (Texas)	77	1,555,120	358,000 23	60,000 4	67,000 4
Falcon Reservoir (Texas and Mexico)	(77)	2,653,290	711,000 27	51,000 2	259,000 10
<b>TOTAL</b>		2,491,620	1,290,240 52	56,520 2	471,000 19

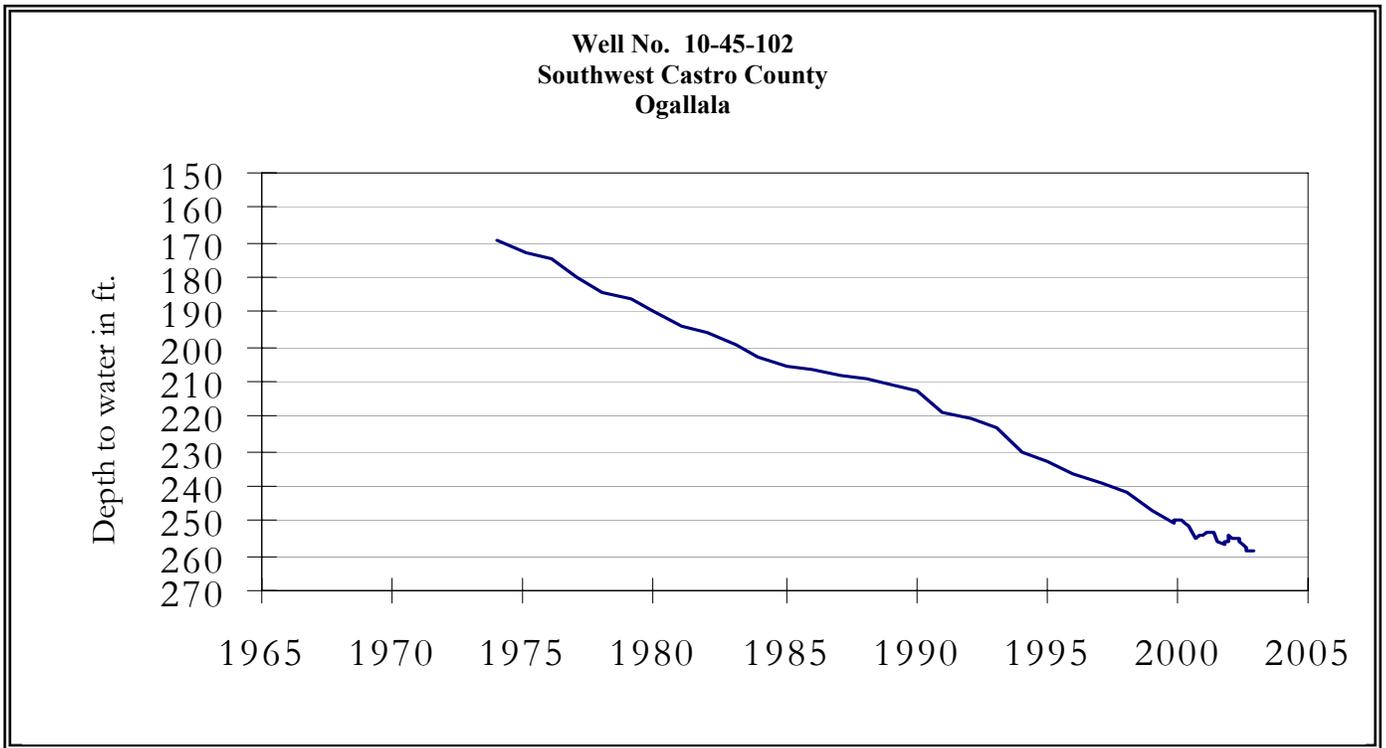
<b>STATE TOTAL</b>		34,470,430	27,844,970 81	405,110 1	1,407,840 4
--------------------	--	------------	---------------	-----------	-------------

**Note:**

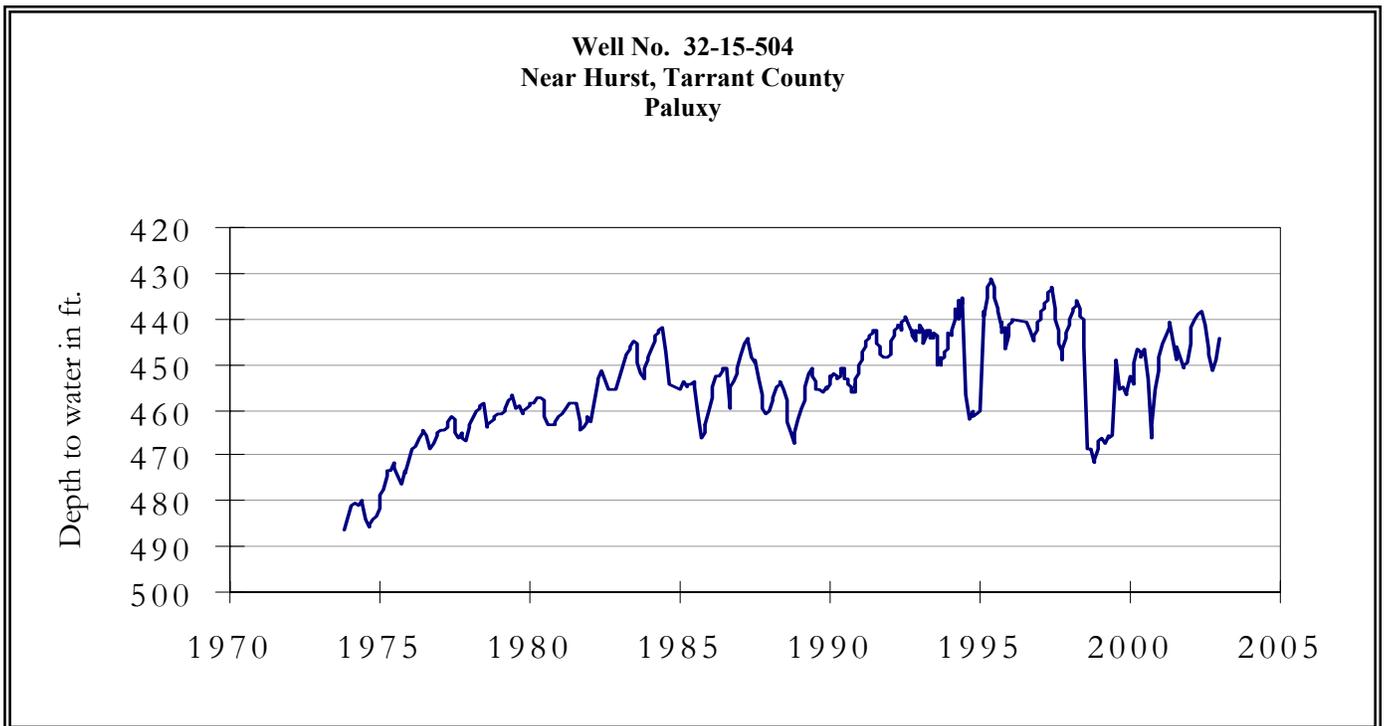
Conservation storage capacity is the space available to store water above the level of invert of lowest outlet works and below the level of top of conservation pool or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level), or any water in so called dead storage (in the bottom of the reservoir, below the invert of lowest outlet works and consequently not removable by gravity flow alone.) Percentage of conservation storage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir for date shown. Percent change is given by % Change = 100 \* (current conservation storage - past conservation storage)/conservation storage capacity.

Current data are based on elevations near end of month at 77 reservoirs that together represent 98 percent of the total conservation storage capacity of major Texas reservoirs (those with capacity of 5,000 acre-feet or more each). Figures in parentheses for Lake Meredith represent the total conservation storage excluding 58,014 acre-feet of dead storage and are not included in State total. Preliminary figures are shown for the United States' share of conservation storage in International Amistad and International Falcon Reservoirs; the estimates may be subject to revision on completion of international water accounting. Texas (United States' share) and Mexico and are not included in State total.

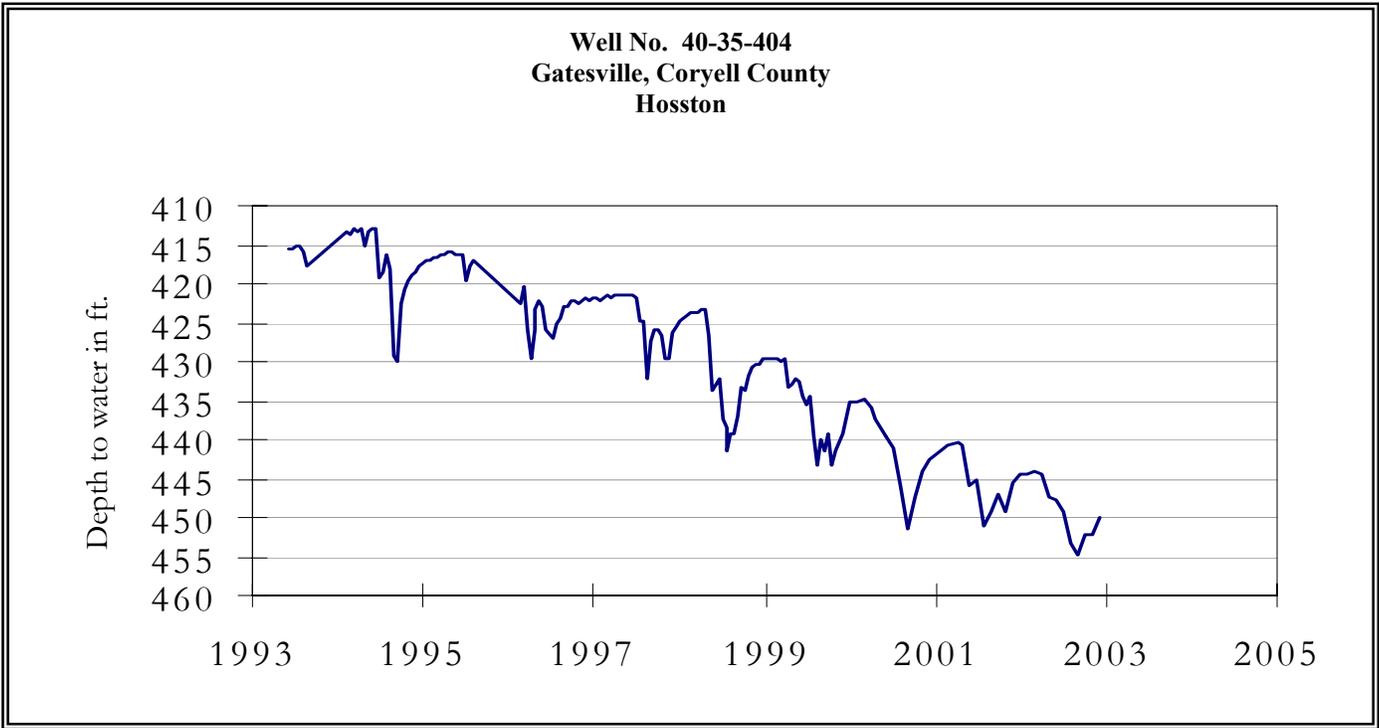
# NOVEMBER GROUND WATER LEVELS IN OBSERVATION WELLS



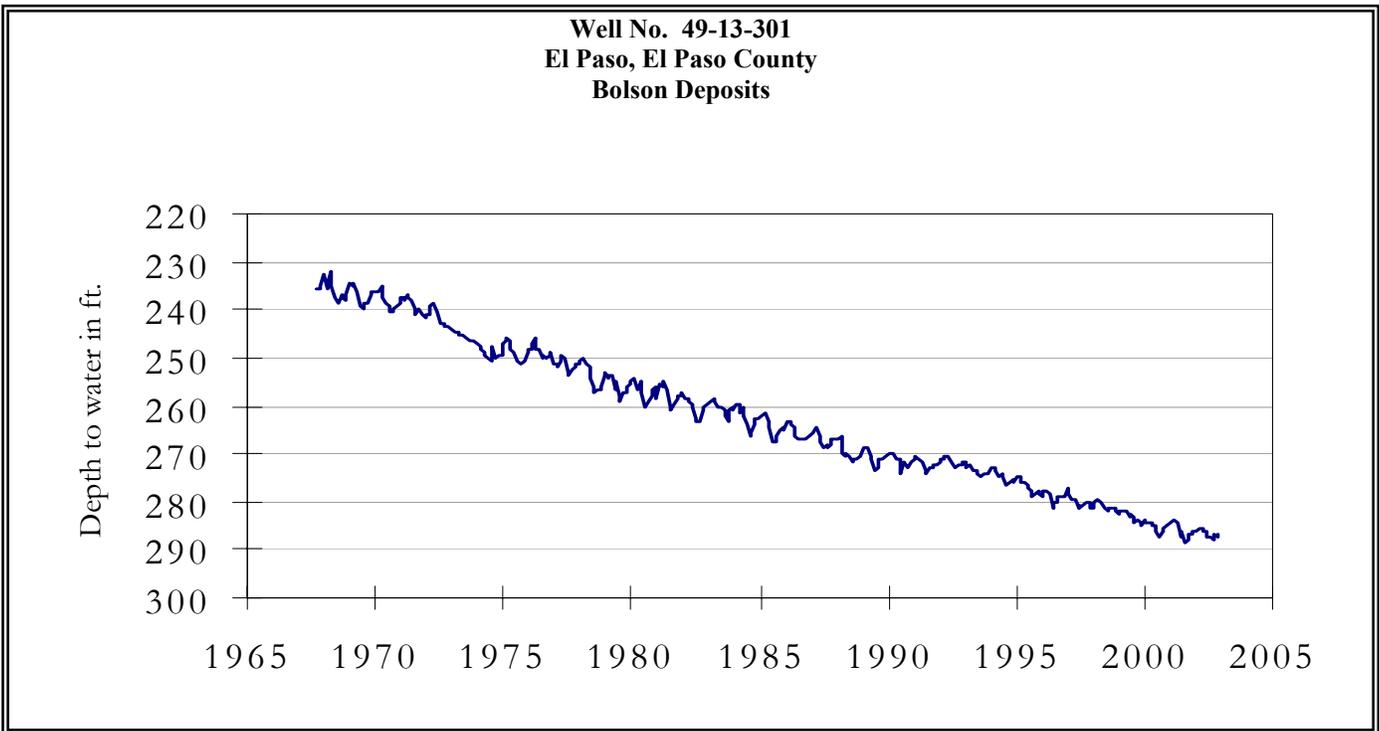
The late November water-level measurement in this Ogallala aquifer well, elevation 3,816 feet above sea level, was 258.34 feet below land surface. This measurement was 0.27 feet above last month's measurement, 2.46 feet below last year's measurement, and 102.34 feet below the initial measurement recorded in 1968.



The late November water-level measurement in this Paluxy Formation Trinity aquifer well, elevation 535 feet above sea level, was 444.10 feet below land surface. This measurement was 5.00 feet above last month's measurement, 5.75 feet above last year's measurement, and 50.71 feet below the initial measurement recorded in 1953.

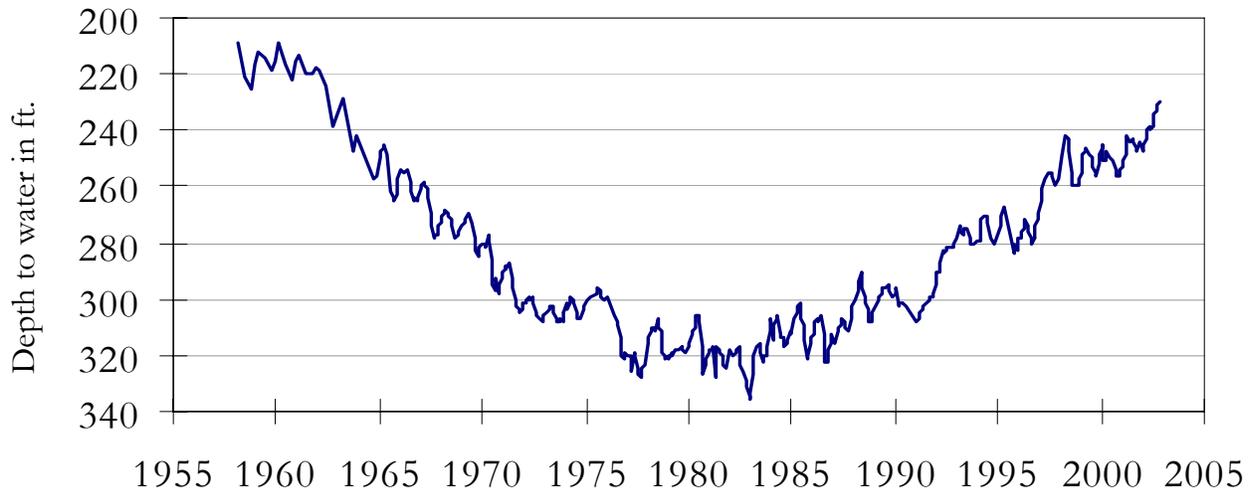


The late November water-level measurement in this Hosston Formation Trinity aquifer well, elevation 823 feet above sea level, was 449.82 feet below land surface. This measurement was 2.51 feet above last month's measurement, 4.30 feet below last year's measurement, and 157.82 feet below the initial measurement recorded in 1955.



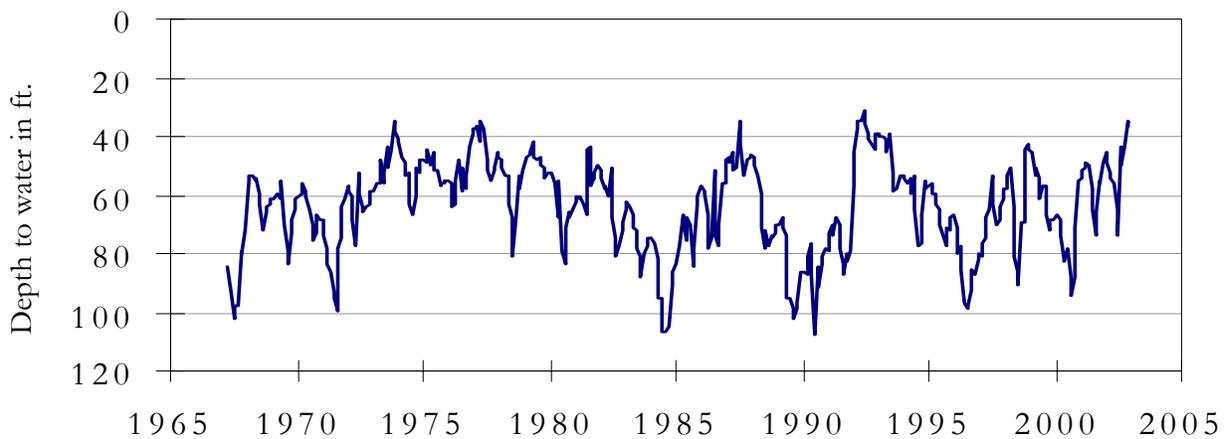
The late November water-level measurement in this Hueco Bolson aquifer well, elevation 3,882 feet above sea level, was 286.74 feet below land surface. This was 0.44 feet above last month's measurement, 0.84 feet below last year's measurement, and 54.84 feet below the initial measurement recorded in 1964.

**Well No. 65-14-409  
Alief, Harris County  
Evangeline**



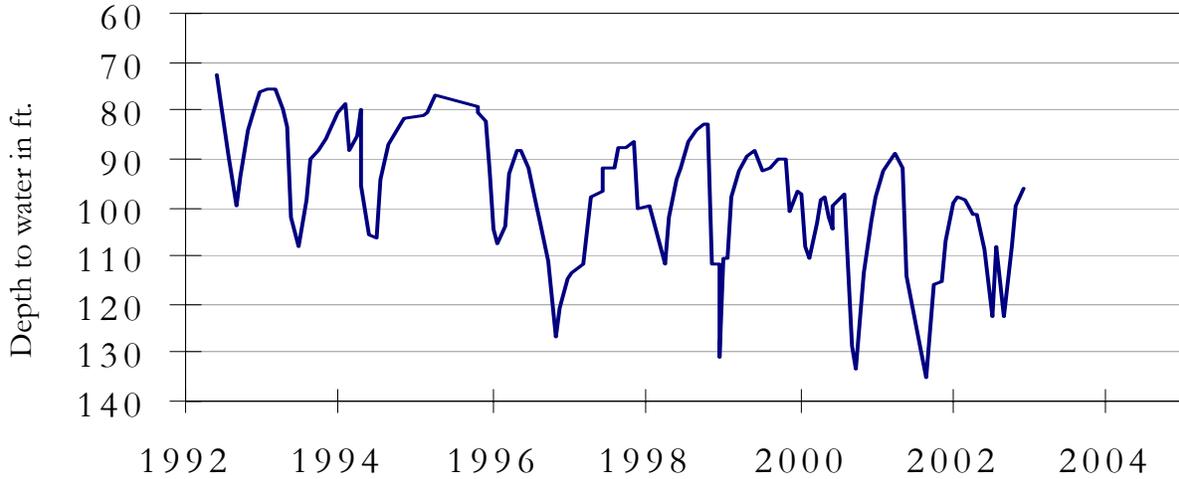
The late November water-level measurement in this Evangeline Formation Gulf Coast aquifer well, elevation 66 feet above sea level, was 229.45 feet below land surface. This was 0.47 feet above last month's measurement, 14.91 feet above last year's measurement, and 126.22 feet below the initial measurement recorded in 1947.

**Well No. 68-37-203 (J-17)  
In San Antonio, Bexar County  
Edwards and Associated Limestones**



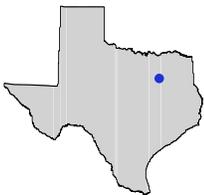
The late November water-level measurement in this Edwards (BFZ) aquifer well, elevation 731 feet above sea level, was 36.31 feet below land surface. This was 1.46 feet below last month's measurement, 12.49 feet above last year's measurement, and 23.31 feet above the initial measurement recorded in 1962.

**Well No. 68-60-912**  
**Between Poteet and Pleasanton, Atascosa County**  
**Carrizo**



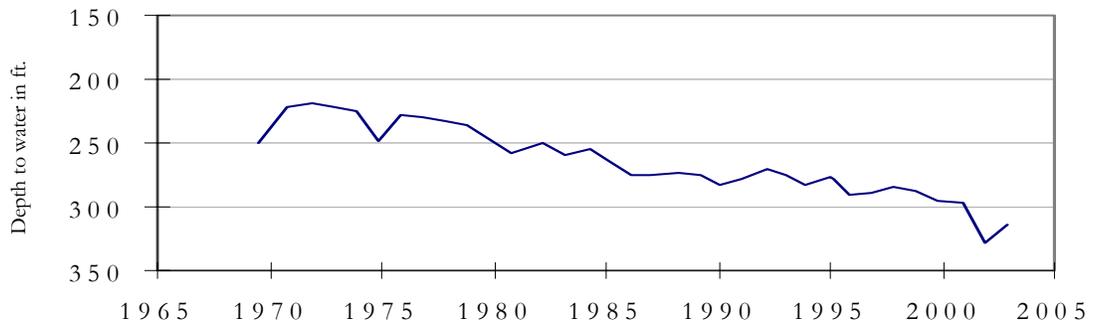
The late November water-level measurement in this Carrizo aquifer well, elevation 446 feet above sea level, was 96.04 feet below land surface. This measurement was 3.72 feet above last month's measurement, 10.79 feet above last year's measurement, and 14.79 feet below the initial measurement recorded in 1965.

### ***HYDROGRAPH OF THE MONTH***



Each month this space features a new hydrograph (marked with the • symbol on the map) depicting different aquifers and different conditions in Texas.

**Well No. 1850202**  
**Collin County**



This 1,900 ft. deep recorder well, located approximately 14 miles NW of the City of Plano, at an elevation of 610 feet above sea level, was completed in the Woodbine aquifer. Since the 1970s, municipal and industrial pumpage has exceeded local recharge, resulting in significant water level declines within the Woodbine aquifer. In this example, the water level has declined approximately 100 feet since 1970.

*TEXAS WATER DEVELOPMENT BOARD  
1700 N. CONGRESS AVE.  
P.O. BOX 13231  
AUSTIN TX 78711-3231*